

What is Claimed is:

- 1 1. An endoluminal prosthesis, comprising:
 - 2 an tubular substrate having an abluminal surface and a luminal surface thereof;
 - 3 and
 - 4 a wire member fabricated of an elastically deformable and elastically recoverable material circumferentially disposed about and adhered to the abluminal surface of the tubular substrate by adhesive means interfacing between the wire member and the tubular substrate.
- 1 2. The endoluminal prosthesis according to Claim 1, wherein the elastically deformable and elastically recoverable material of the wire member is selected from the group of materials consisting of shape memory alloys, biocompatible spring steels, biocompatible spring metal alloys, and carbon fibers.
- 1 3. The endoluminal prosthesis according to Claim 2, wherein the shape memory alloys further comprise nickel-titanium alloys.
- 1 4. The endoluminal prosthesis according to Claim 2, wherein the wire member further comprises a shape memory alloy which a pre-programmed austenite dimensional state which is substantially the same diametric dimension as the diametric dimension of the tubular-shaped substrate.
- 1 5. The endoluminal prosthesis according to Claim 1, further comprising a polymeric cladding concentrically surrounding the wire member, the cladding being in intimate contact with and joined to the abluminal surface of the tubular-shaped substrate.
- 1 6. The endoluminal prosthesis according to Claim 5, wherein the adhesive means further comprises a polymeric covering on the wire member and is selected from the group consisting of polytetrafluoroethylene, polyurethane, polyethylene, polypropylene, polyamide, polyimide, polyesters, polypropylene, polyethylene, polyfluoroethylenes, silicone, fluorinated polyolefins,

5 fluorinated ethylene/propylene copolymer, perfluoroalkoxy fluorocarbon,
6 ethylene/tetrafluoroethylene copolymer, and polyvinylpyrrolidone.

1 7. The endoluminal prosthesis according to Claim 1, wherein the tubular-shaped substrate
2 further comprises a biocompatible material selected from the group consisting of expanded
3 polytetrafluoroethylene, polyethylene, polyethylene terephthalate, polyurethane, and collagen.

1 8. An endoluminal prosthesis comprising a support wire member joined to a planar
2 expanded polytetrafluoroethylene film member, the support wire member and planar expanded
3 polytetrafluoroethylene film member being helically wound into an open cylindrical
4 configuration with adjacent windings forming overlapping regions of the expanded
5 polytetrafluoroethylene film member bonded to one and other.

1 9. The endoluminal prosthesis according to Claim 8, further comprising a planar
2 polytetrafluoroethylene film member in intimate contact with and monolithically joined to the
3 planar expanded polytetrafluoroethylene film member, the support wire member being
4 intermediate the second planar expanded polytetrafluoroethylene film member and the planar
5 expanded polytetrafluoroethylene film member.

1 10. The endoluminal prosthesis according to Claim 8, further comprising a bonding agent
2 joining the support wire member and the planar expanded polytetrafluoroethylene film member.

1 11. The endoluminal prosthesis according to Claim 9, further comprising an adhesive
2 interlayer interdisposed between the planar polytetrafluoroethylene film member and the planar
3 expanded polytetrafluoroethylene film member.

1 12. The endoluminal prosthesis according to Claim 9, wherein the planar
2 polytetrafluoroethylene film member further comprises expanded polytetrafluoroethylene.

1 13. The endoluminal prosthesis according to Claim 10, wherein the adhesive material is
2 selected from the group consisting of polytetrafluoroethylene, polyurethane, polyethylene,
3 polypropylene, polyamide, polyimide, polyesters, polypropylene, polyethylene,
4 polyfluoroethylenes, silicone, fluorinated polyolefins, fluorinated ethylene/propylene copolymer,
5 perfluoroalkoxy fluorocarbon, ethylene/tetrafluoroethylene copolymer, and polyvinylpyrrolidone.

1 14. The endoluminal prosthesis according to Claim 10, wherein the bonding agent is
2 disposed intermediate the wire member and an abluminal wall surface of polytetrafluoroethylene
3 tubular substrate.

1 15. The endoluminal prosthesis according to Claim 10, wherein the bonding agent further
2 comprises a concentric cladding surrounding the wire member.

1 16. An endoluminal prosthesis, comprising:
2 a expanded polytetrafluoroethylene tubular-shaped substrate; and
3 a wire member fabricated of a shape memory alloy helically wound about and adhered to
4 an abluminal surface of the expanded polytetrafluoroethylene tubular-shaped substrate.

1 17. The endoluminal prosthesis according to Claim 16, wherein the shape memory
2 stent further comprises a nickel-titanium alloy.

1 18. The endoluminal prosthesis according to Claim 17, wherein the nickel-titanium
2 alloy further comprises an alloy consisting essentially of nickel present at about 50 at. %,
3 titanium present at about 50 at. %.

1 19. The endoluminal prosthesis according to Claim 16, wherein the wire member has
2 a pre-programmed austenite dimensional state which is substantially the same diametric
3 dimension as the diametric dimension of the expanded polytetrafluoroethylene tubular-shaped
4 substrate.

1 20. The endoluminal prosthesis according to Claim 16, further comprising a
2 polymeric cladding concentrically surrounding the wire member, the cladding being in intimate
3 contact with and joined to the abluminal surface of the tubular-shaped substrate.

1 21. The endoluminal prosthesis according to Claim 20, wherein the polymeric
2 covering is selected from the group consisting of polytetrafluoroethylene, polyurethane,
3 polyethylene, polypropylene, polyamide, polyimide, polyesters, polypropylene, polyethylene,
4 polyfluoroethylenes, silicone, fluorinated polyolefins, fluorinated ethylene/propylene copolymer,
5 perfluoroalkoxy fluorocarbon, ethylene/tetrafluoroethylene copolymer, and polyvinylpyrrolidone.
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1 22. A method for making an endoluminal prosthesis, comprising the step of wrapping
2 a wire member made of a shape memory alloy about and in intimate bonded contact with an
3 abluminal surface of a seamless expanded polytetrafluoroethylene tubular member.

1 23. The method for making an endoluminal prosthesis according to Claim 22, further
2 comprising the step of providing the wire member with a concentric cladding fabricated of a
3 material capable of bonding to the expanded polytetrafluoroethylene tubular member.

1 24. The method for making an endoluminal prosthesis according to Claim 23, wherein the
2 step of providing the wire member with a concentric cladding further comprises the step of
3 selecting a cladding material from the group consisting of polytetrafluoroethylene, polyurethane,
4 polyethylene, polypropylene, polyamide, polyimide, polyester, polyfluoroethylenes, silicone,
5 fluorinated polyolefin, fluorinated ethylene/propylene copolymer, perfluoroalkoxy fluorocarbon,
6 ethylene/tetrafluoroethylene copolymer, and polyvinylpyrrolidone.

1 25. The method for making an endoluminal prosthesis according to Claim 24, wherein the
2 step of providing the wire member further comprises the steps of co-extruding the wire member
3 with a polytetrafluoroethylene cladding.

1 26. The method for making an endoluminal prosthesis according to Claim 25, further
2 comprising the steps of applying a helical wrapping of polytetrafluoroethylene tape
3 circumferentially about the expanded polytetrafluoroethylene tubular substrate and the wire
4 member co-extruded with the polytetrafluoroethylene cladding and along an entire longitudinal
5 extent of the expanded polytetrafluoroethylene tubular substrate thereby radially and
6 longitudinally securing the expanded polytetrafluoroethylene tubular substrate and sintering the
7 assembly at a temperature above the crystalline melt point of polytetrafluoroethylene and for a
8 period of time sufficient to bond the polytetrafluoroethylene cladding to the expanded
9 polytetrafluoroethylene substrate.

1 27. The method for making an endoluminal prosthesis according to Claim 24, further
2 comprising the step of heating the expanded polytetrafluoroethylene tubular substrate and the
3 concentrically clad wire member to a temperature above the melt point of the bonding agent for a
4 period of time sufficient to mechanically bond the concentrically clad wire member to the
5 abluminal surface of the polytetrafluoroethylene tubular substrate.

1 28. The use of an intraluminal prosthesis according to Claim 1 for bypass of an anatomical
2 conduit.

1 29. The use of an intraluminal prosthesis according to Claim 1 for creating an arterio-venous
2 shunt.

1 30. The use of an intraluminal prosthesis according to Claim 23 for creating a transluminal
2 intrahepatic portosystemic shunt.

1 31. The use of an intraluminal prosthesis according to Claim 1 as an intraluminal support
2 structure for maintaining luminal patency.

1 32. The use of an intraluminal prosthesis according to Claim 25 further comprising the use
2 for restoring luminal patency in an anatomical fluid conduit.